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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

Andrej S. MITROVIC, et al.

SERIAL NO: 10/767,347

GROUP: 2857

FILED: January 30, 2004

EXAMINER: Hal D. Wachsman

RCE FILED: May 1, 2006

FOR: METHOD AND SYSTEM FOR MONITORING COMPONENT
CONSUMPTION

LETTER

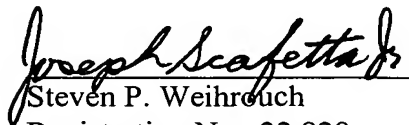
Mail Stop DD
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is an International Preliminary Report on Patentability and a Written Opinion for the Examiner's consideration.

Respectfully Submitted,

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 245045WO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/US2004/037196	International filing date (<i>day/month/year</i>) 29 November 2004 (29.11.2004)	Priority date (<i>day/month/year</i>) 30 January 2004 (30.01.2004)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant TOKYO ELECTRON LIMITED			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 31 July 2006 (31.07.2006)
Facsimile No. +41 22 338 82 70	Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Philippe Becamel</div> e-mail: pt12@wipo.int

PATENT COOPERATION TREATY

REC'D 13 JUL 2005

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From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:
GREGORY J. MAIER
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Date of mailing
(day/month/year)

11 JUL 2005

Applicant's or agent's file reference

245045WO

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US04/37196

International filing date (day/month/year)

29 November 2004 (29.11.2004)

Priority date (day/month/year)

30 January 2004 (30.01.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): G06F 15/00 and US CL: 702/166,155,159,170,172;438/14,16

Applicant

TOKYO ELECTRON LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

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Authorized officer

Julie Burke

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Janice Ford
for

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/37196

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/37196

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 3,6,7,11,16,19,21,26,27 and 32 YES

Claims 1-2,4,8-10,14-15,17,20,24,25,28,33 and 35-37 NO

Inventive step (IS)

Claims 3,6,7,11,16,19,21,26,27 and 32 YES

Claims 5,12,13,18,22,23,29-31,34,38 and 39 NO

Industrial applicability (IA)

Claims 1-39 YES

Claims NONE NO

2. Citations and explanations:

Please See Continuation Sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/37196

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

Claims 1, 2, 4, 8-10, 14, 15, 17, 20, 24, 25, 28, 33, and 35-37 lack novelty under PCT Article 33(2) as being anticipated by Peterson et al.

With regard to claims 1, 14, and 24, Peterson et al teaches a system for monitoring a component comprising: a radiation source configured to emit a radiation beam onto a first area of a component (fig. 1, part 108), a detecting unit configured to detect a portion of the radiation beam that is refracted by the component and to generate a radiation level signal based on a strength of the detected portion of the radiation (fig. 1, part 110 & fig. 2, step 206), and a control unit configured to determine the status of the component based on the radiation signal (fig. 2, part 212).

With regard to claims 2, 15, and 25, Peterson et al teaches determining a thickness of the component based on the signal and comparing the thickness to a predetermined value (fig. 2, step 212 & 16).

With regard to claims 4, 17, and 33, Peterson et al teaches the detected portion of the beam being a portion that is refracted a first time by a first surface, transmitted through the component, reflected by a second surface, and refracted a second time by the first surface (fig. 1 & 11 26).

With regard to claims 8 and 9, Peterson et al teaches a data storage storing data correlation relating to thicknesses of component materials (§ 23).

With regard to claims 10, 20, and 37, Peterson et al teaches the component being a semiconductor material (fig. 1, part 104).

With regard to claim 28, Peterson et al teaches measuring an initial thickness and identifying a material of the component (fig. 1, step 318).

With regard to claims 35 and 36, Peterson et al teaches referring to stored correlation data to determine thickness of the component, the correlation data including thicknesses for a plurality of materials (fig. 1, step 318).

Claims 5, 12, 13, 18, 22, 23, 29-31, 34, 38 and 39 lack an inventive step under PCT Article 33(3) as being obvious over Peterson et al in view of Sui et al.

With regard to claims 5, 12, 13, 18, 22, 23, 34, 38, and 39, Peterson et al teaches one radiation source being used but does not specify using more than one infrared radiation source. Sui et al teaches a method of monitoring recessed portions in a material using two infrared radiation sources and two detectors (fig. 1, part IA, pads 59 and fig. 7b, pads 54). It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Peterson et al, so that more than two sources and detectors are used, as taught by Sui et al, in order to be able to improve the accuracy and precision of component monitoring.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/37196

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

With regard to claims 29-31, Peterson et al teaches determining the thickness of a component but does not specify determining the rate of erosion of a component. Sui et al teaches a method of monitoring a material in which the erosion rate and remaining life of a component is determined based on thickness measurements (col. 7, lines 16+). It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Peterson et al, so that erosion rate is determined, as taught by Sui et al, so as to be able to determine the extent of damage to a component being done.